



Data Summary

Recorded below is a summary of the analytical work performed to date for all ground water ~~and~~ samples taken with regard to the contamination caused by Reilly Tar.

~~The data are divided into three major sections: Groundwater, Surface Water, and Air.~~ The data ~~sections~~ are arranged according to ~~the~~ municipality, ~~the~~ water supply well, well ~~identification~~ identification, and date of sample. For each well ~~at~~ sample date, all available PAH, phenol, TOC and DOC data are presented.

~~Since 1978, individual PAH concentrations should not be detected.~~

The Minnesota Dept of Health Laboratory performed all ~~the~~ PAH analyses. Prior to 1978, ~~the~~ MDH lab was ~~unable~~ unable to detect ~~individual~~ individual PAH compounds.

During the period ~~from 1978 to 1980~~, the MDH lab analyzed for ~~the~~ PAH compounds.

Between ~~1978 and 1980~~, the number of PAH compounds analyzed for increased to ~~15~~. By ~~1980~~, refinement of the analytical technique provided for the possible detection of ~~15~~ PAH compounds.

In addition to recording the concentrations ~~of~~ ^{detectable} of PAH compounds ~~detected~~, this summary also records the number of PAH compounds below the detectable limit of the ~~analytical~~ procedure used at the time of analysis.

~~Insert #~~ As of ~~1980~~ 008709 well water samples have been collected ~~and~~ and analyzed from ~~15~~ wells in 9 municipalities. ~~Analysis of~~ ~~but~~ ~~has~~ ~~been~~ ~~performed~~ ~~on~~ ~~surface~~ ~~water~~ ~~samples~~ ~~has~~ ~~been~~ ~~performed~~.



1

[Faint, illegible handwriting throughout the page, likely bleed-through from the reverse side.]

Insert A

The Analysis of phenolic compounds ~~has~~ has been performed by several laboratories, including the MDH Lab, Tri-City Lab, Sarco Lab, and ~~MDH Lab~~ ~~MDH Lab~~ Lab. Analyses of TSS and COD was performed by USGS in the field and MDH.

008710

Several laboratories have been responsible

Field data —

SFP area well samples taken Spring, 1979 by U.S.G.S

MDH - analyzed

(can be matched w/ PAH data received from MDH)

date 3-28-79

Sample No. 70636/70635

DOC (field filtered) 2.5 mg/l

Phenol < 2.0 mg/l

TOC 1.9

Sample No. 70638/70637

DOC 4.5 mg/l

Phenol (MBTH) 9.0 mg/l

TOC 4.2

Sample No. 70640/70639

DOC 9.1 mg/l

Phenol 19 mg/l

TOC 9.9

date 3-22-79

Sample no. 70642/70641

DOC 11 mg/l

Phenol 34 mg/l

NA

Sample no. 70644/70643

DOC 1.9 mg/l

Phenol 10 mg/l

NA

date 3-27-79

Sample no. 70646/70645

DOC 7.2 mg/l

Phenol 73 mg/l

NA

Sample no. 70648/70647

DOC 2.2 mg/l

Phenol < 2.0 mg/l

NA

Sample no. 70650/70649

DOC 16 mg/l

Phenol 110 mg/l

NA

(diff?)

008711

even sample nos. were filtered in the field
odd sample nos. were filtered

date 3-29-79

sample no. 70652 / 70651

DOC

DOC

< 2.0 mg/l

phosph

3.2

TOC

sample no. 70654 / 70653

DOC

DOC

5.0

phosph

3.9

TOC

sample no. 70656 / 70655

DOC

DOC

9.4

phosph

5.3

TOC

date 3-29-79

W13

sample no. 70658 (total)

DOC

NA

phosph

81000 mg/l

TOC

6900 mg/l

W15

sample no. 70657 (total)

DOC

NA

phosph

27000

TOC

6000

W100

sample no. 70659

phosph

< 2.0

DOC

N/A

TOC

NA

date 4-3-79

W11

sample no. 70661 / 70660

DOC

NA

phosph

3.8

TOC

8.0

W17

sample no. 70663 / 70662

DOC

NA

phosph

240

TOC

7.7

8.6 filtered

sample no. 70669 / 70665

DOC

NA

phosph

9.3

TOC 16

5.8 filtered

008713

Date 4.12.79

SLP W24 sample no. 70675 / 70679

phenol
lab DOC, TOC NA
2.0
4.1
5.2 (f)

SLP W17

phenol
lab DOC
2.6
4.2
2.2 (f)

SLP W16

phenol
lab DOC
2.2
2.5
2.1 (f)

SLP W26

sample no. 70679 / 70678

Date 4.19.79

phenol
lab DOC
9.0
3.3
2.9 (f)

SLP W8

phenol
lab DOC
26
14
9.0 (f)

SLP W12

sample no. 70671 / 70670

Date 4.10.79

phenol
lab DOC
2.0
8.3
8.5 (f)

W16

sample no. 70669 / 70668

phenol
lab DOC
4.8
17
8.5 (f)

W10

sample no. 70667 / 70666

Date 4.5.79

phenol

lab DOC, TOC NA

sample no. 70675 / 70679

13

SLP W14 sample no. 70677 / 70676
lab DOC, TOC - NA
phenol 27

Date 9.17.89

SLP W115 sample no. 70684
lab DOC, TOC NA
phenol 9.0

SLP W101 sample no. 70685
lab DOC, TOC NA
phenol 14

Field Data

SLP well samples ~~from~~ Spring, 1979

U.S. GS field data is summarized in sheet for all ~~the~~ wells sampled by USGS

the information available from sheet is sample location

station ID

Latitude / Longitude

Date of Collection

Time

State / Country

Project ID

Data Type codification

Source

Geologic Unit

Field Comments — eq. sampler ID

odor

previous dates of sampling

analyzing agency

Dissolved organic carbon mg/l

Suspended organic carbon mg/l

Depth of well ft.

Depth — bottom of water zone

top of water zone

pH (field measurement)

pumping period (min.)

specific conductance (field)

H₂O temp (°C)

yield q/m

inorganics

anions

anions

specific organics have not been entered because

there is no ~~method~~ codification of organic analytic techniques

USGS personnel ~~to~~ check all sheet entries by print out proof-reading

008715

1877
The first of the year

to the 1st of January 1877
I have only a few lines to write

to the 1st of January 1877
I have only a few lines to write

to the 1st of January 1877
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to the 1st of January 1877
I have only a few lines to write

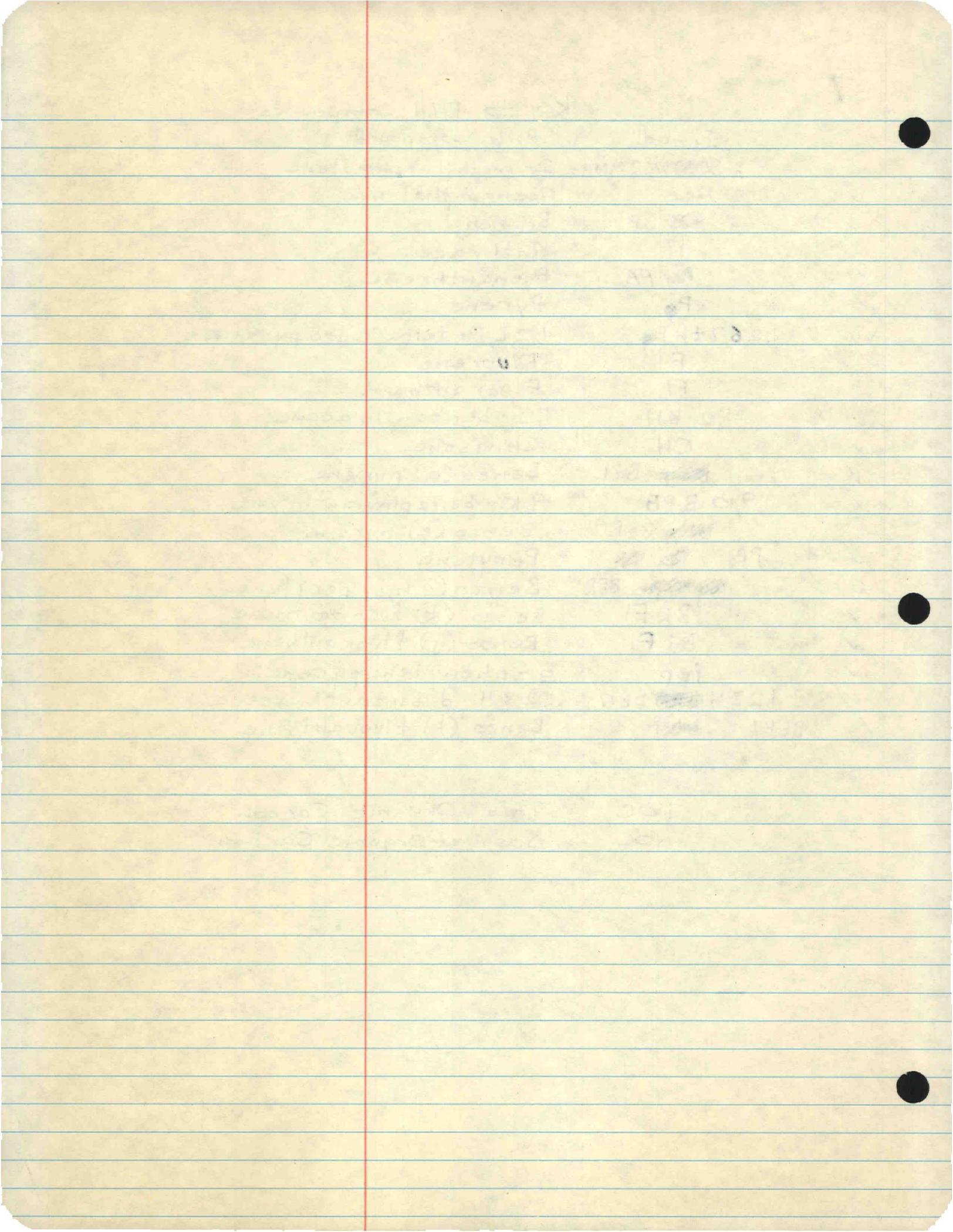
to the 1st of January 1877
I have only a few lines to write

to the 1st of January 1877
I have only a few lines to write

Key to PAH Compounds

	<u>Symbol</u>	<u>PAH Compound</u>
✓	2MNA 2MNA	2-methylnaphthalene
✓	Ace	Acenaphthalene
✓	B BP	Biphenyl
✓	A	Anthracene
✓	PA PA	Phenanthrene
✓	P	Pyrene
✓	1,2,6,7 tHP	1,2,6,7-tetrahydro pyrene
✓	F	Fluorene
✓	Fl	Fluoranthene
✓	1,2 BA	1,2-benzanthracene
✓	CH	Chrysene
✓	BaP BaP	Benzo (a) pyrene
✓	9,10 BPA	9,10-benzphenanthrene
✓	BeP BeP	Benzo (e) pyrene
✓	PR	Perylene
✓	BPR BPR	Benzo (q,h,i) perylene
✓	BkFl	Benzo (k) fluoranthene
✓	BjFl	Benzo (j) fluoranthene
✓	ipp	o-phenylene pyrene
✓	1,2,3,4 DBA DBA	1,2,3,4-di benzanthracene
✓	BbFl	Benzo (b) fluoranthene
	TOC	Total Organic Carbon
	DOC	Dissolved Organic Carbon

008716



Marc F. Hult
Hydrologist GS-9
September 1, 1980
St. Paul, Minnesota

Bibliography

- Hult, M. F., 19__ , Effect of flow in multi-aquifer wells on the quality of ground water in southeastern Minnesota: U.S. Geological Survey Water-Resources Investigations. (In preparation).
- Hult, M. F., 19__ , Ground-water contamination by coal-tar derivatives, St. Louis Park area, Minnesota--An overall evaluation: U.S. Geological Survey Water-Resources Investigations. (In preparation).
- Hult, M. F., and Schoenberg, M. E., 1980, Ground-water contamination by coal-tar derivatives, St. Louis Park area, Minnesota--A preliminary evaluation: U.S. Geological Survey Water-Resources Investigations Open-File Report. (In Headquarters).
- Hult, M. F., 1979, Design of a network for monitoring ground-water quality in Minnesota: U.S. Geological Survey Open-File Report 79-1164, 44 p.
- Lindholm, G. F., Ericson, D. W., Broussard, W. L., and Hult, M. F., 1979, Water resources of the St. Louis watershed, northeastern Minnesota: U.S. Geological Survey Hydrologic Investigations Atlas HA-586.
- Anderson, H. W., Jr., Broussard, W. L., Farrell, D. F., and Hult, M. F., 1976, Water resources of the Des Moines River watershed, southwestern Minnesota: U.S. Geological Survey Hydrologic Investigations Atlas HA-553, 3 sheets.
- Farrell, D. F., Broussard, W. L., Anderson, H. W., Jr., and Hult, M. F., 1975, Water resources of the Cedar River watershed, southeastern Minnesota: U.S. Geological Survey Hydrologic Investigations Atlas HA-552, 3 sheets.
- Anderson, H. W., Jr., Farrell, D. F., Broussard, W. L., and Hult, M. F., 1975, Water resources of the Zumbro River watershed, southeastern Minnesota: U.S. Geological Survey Hydrologic Investigations Atlas HA-543, 3 sheets.

003692

Methodist Hospital

6500 Excelsior

St Louis Park

Meadowbrook Golf Course

201 Meadowbrook Rd.

St. Louis Park

008703

NON-RESPONSIVE

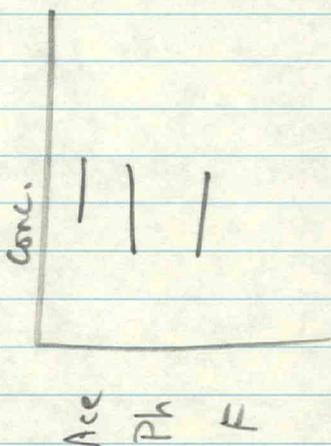
NON-RESPONSIVE

- 1
- ① map of SLP / all wells
w/ location of wells
attached all samples from a given well

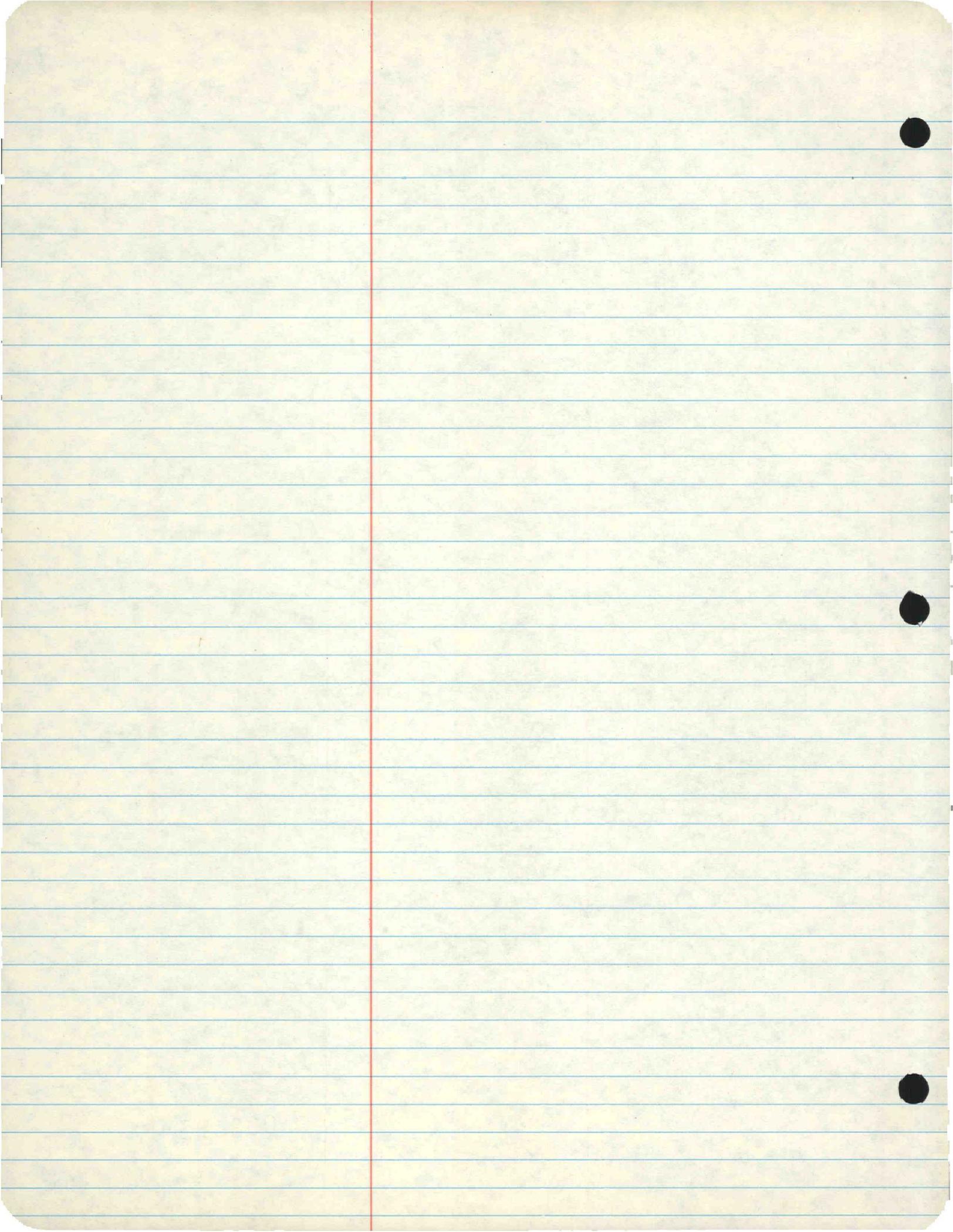
overlays by time period

- ② summarizing data
how many wells
date / time period

- ③ map of SLP / 5-10 most heavily
bar graphs



008693



Pollution abatement comm Mtg. 1 monthly

MST
10/10

Nacem Quessh
612-700-9033

Dick Kopy
Vern Tollesund

PAH
data summary
no date yet
etc.

city List

National Biocentrics 11-1-76 ✓
Barr Phase 1 376 ✓
— Sunde report

~~get~~
~~bedrock 9/1969~~
~~soil phenols~~ max depth 18'
~~0.01 - 0.04 ppm phenol~~

Water Resources Data for Minnesota, Water Year 1976

USGS Water-Data Report MN-76-1

Public Hearing transcript NPDES Permit # MN0045489 (storm H₂O)

St. Louis Park Ground H₂O Study Contract (for Barr) 1975

— Chronology of Republic Geosote 10.30.74 by SLP
time period 2.2.68 - 10.28.74

reports - MDH, Sankarvin 9/8 - 11/12/32 ~~phenol~~

reports - MDH May, 1938

11-23-77 letter to U.T. for well abandonment
from R.L. Wade, MDH - Environmental Health Div.

(78?)
Tables 2-10 of recent report (not referenced)

Bloomington well logs

Ground phenol data

Inner Grove Heights wells & phenol data

Brooklyn Park well listing

water use restriction bulletins, SEP May, 1980

MPCA - statement for Public Mtg. SEP 11/20/79

~~MPCA - memorandum on SEP development proposal~~

Barr Engineering Proposal 8-11-75

~~etc.~~

008694

008695

Edna, Hopkins, Minnesota
05 M

Kd M
M DNR
M 95
MDH
SLP

Saved Lab
172 Terrace Drive
Roseville MN 55113
(612) 636-7176

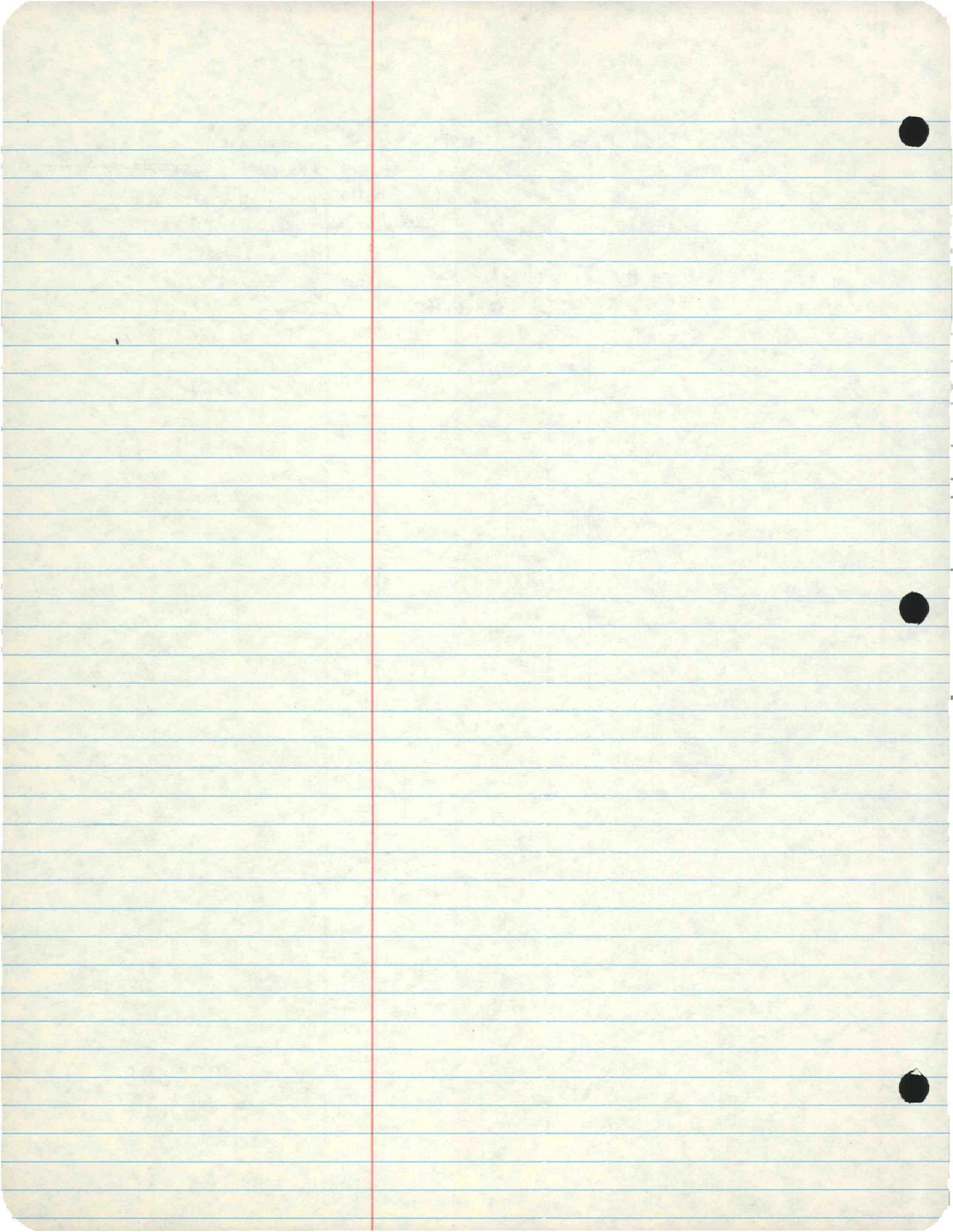
NON-RESPONSIVE

NON-RESPONSIVE

008697

NON-RESPONSIVE

008698



Edina phenols

date 8.23.77

well # 2,3,4,5,6,7,8,9,10,11,12,13,14,17,18

phenol $\mu\text{g/l}$ <2.

collected by R. Koch

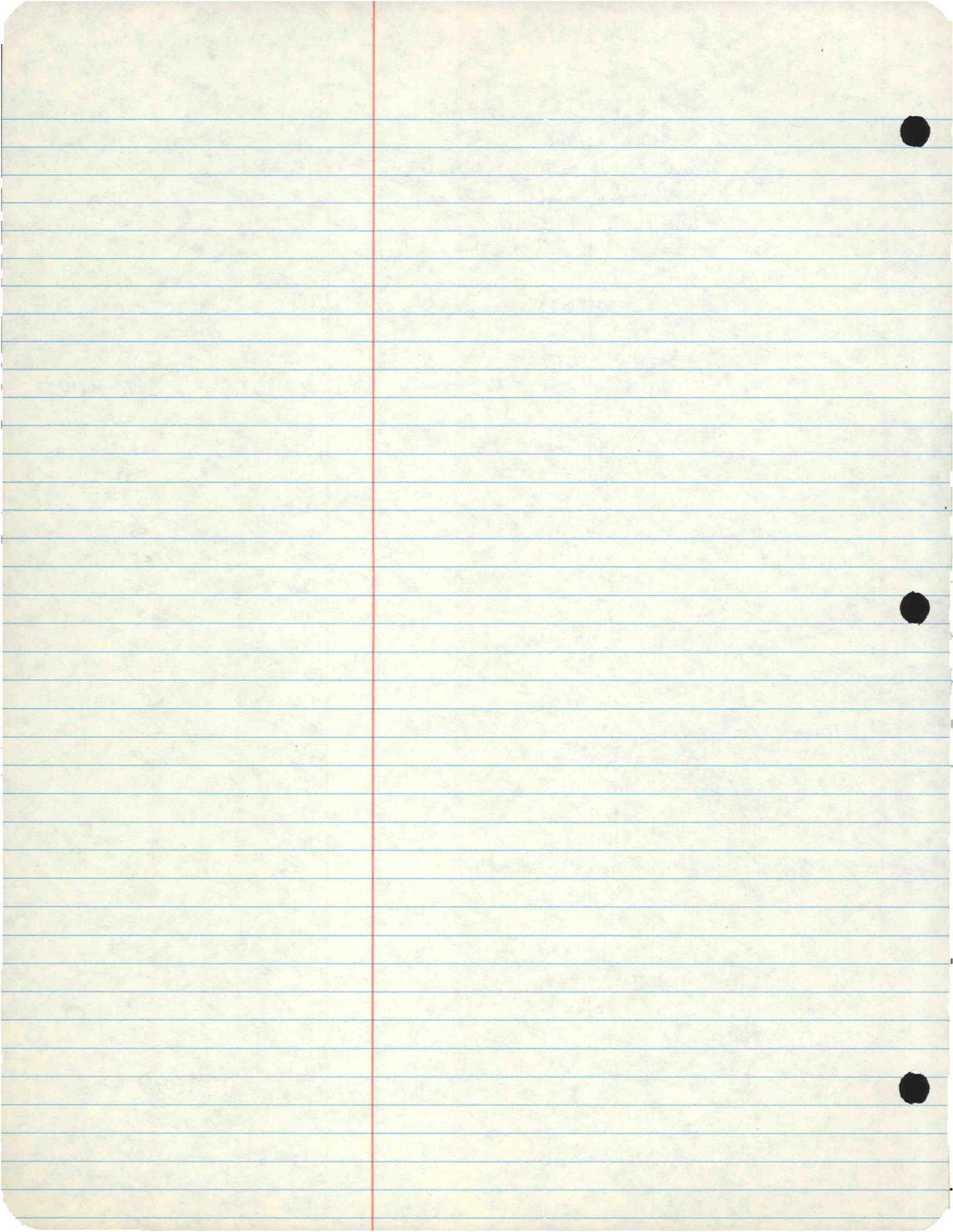
David Engstrom MDH

well # 15 phenol 12 $\mu\text{g/l}$

date 7.23.75

well #	phenol $\mu\text{g/l}$	TOC mg/l
2	<2	<5
3	<2	<5
4	5.1	<5
5	2.4	<5
6	20	<5
7	<2	<5
8	<2	<5
9	14	<5
10	<2	<5
11	3	<5
12	9.6	<5
13	<2	<5
14	<2	<5
15	<2	"
16	18	"
17	10	"
18	<2	"

008699



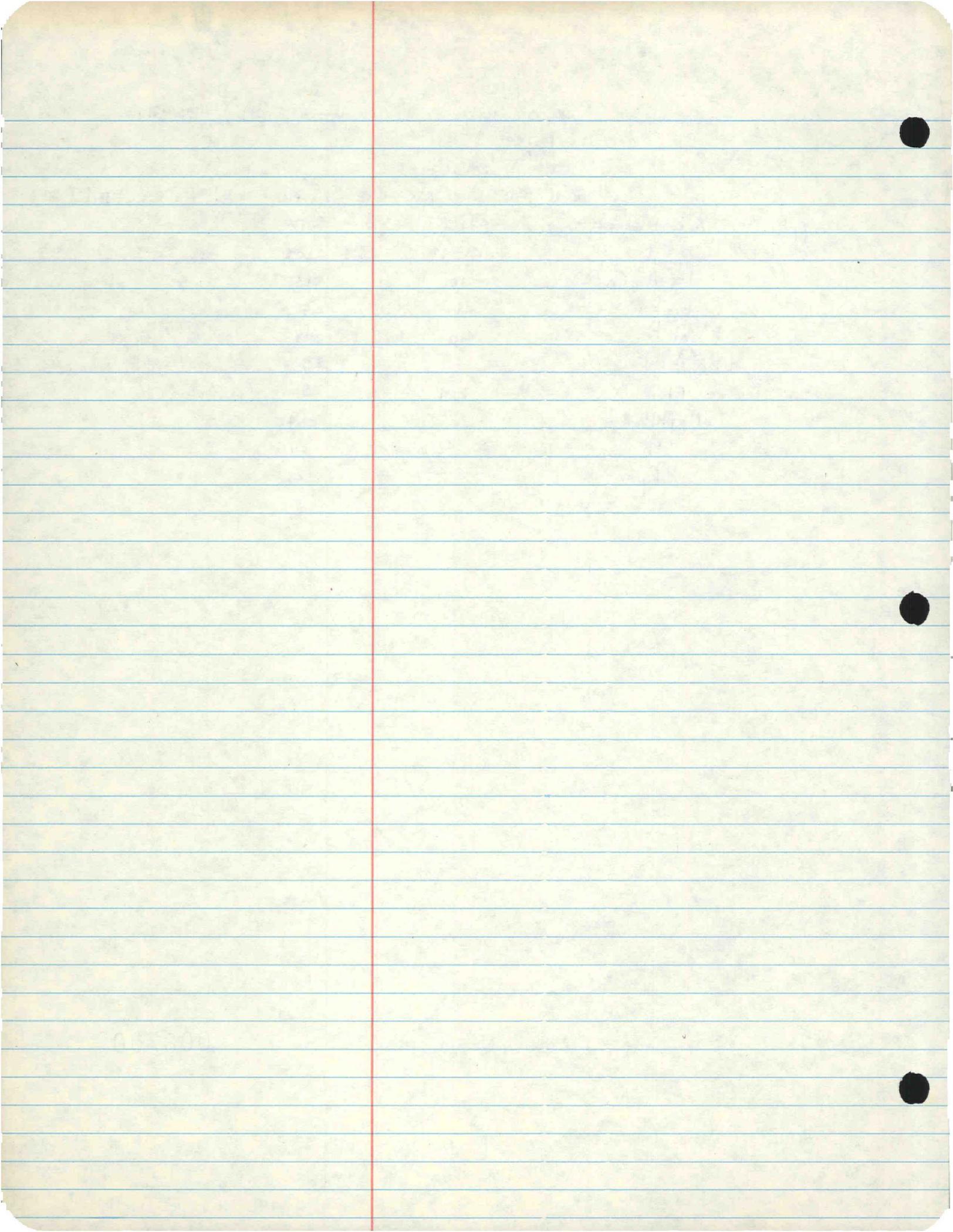
Secco Data P. Thingvold (612) 636-7173

date 10/2/79

for SLP

	well #15	2 ⁰⁰ AM	2 ⁰⁰ PM	undetected
ppt	Ace + dba ^F	<720	<420	
	A	<340	<200	
	ba A+Ch	<10	<15	
	ba P	<6	<4	
	b ghi Pe	<10	<18	
	dba A	<2	<1	
	Fl	<9	<5	
	Naphth a	<590	<340	
	Ph	<210	<120	
	Py	<37	<21	

008700



2:00 PM

U.S. Atty Mtg.

MPCA	Jay Heffernan	Lovell Richie
	SS	Dennis Coyne
MDH	Roger Doreuse	Bill Miller

USEPA

US Atty Berg / Herman

background

communication from Reilly Atty day before filed
 Ed Schwartzbauer
 Bill Keppel

want to postpone motion to intervene
 motion to dismiss to be heard 11/25 or 26
 U.S. Atty opposing intervention continuance

no intent to penalize, just for cleanup
 Reilly has benefited from operation

treatment v. barrier wells + excavation
 don't want to do
 source not knowing

"reasonable + significant effort"

don't know what Reilly will present tomorrow

what Berg wants

friendly, lowkey discussion
 keep ball in Reilly's court
 not technically detailed

general discussion of money - put Reilly out of business

procedural

continuance on motion to intervene
 motion to dismiss

008701

X

no negotiations

Shackman
MN history

73-74 (sale) - no commitments on part of MPCA
75-76 legislature appropriated \$100,000 for Barr

79 NDH letter to Reilly, Reilly said kiss off

Reilly → ERT April, 80 why w/ USGS

ERT generally - industrial advocates

Reilly has feeling ~~the~~ - doesn't know what MN wants
pilot study

control strategies
excavation
barrier wells
clay
bacteria

partial -
well abandonment +
aquifer treatment

carbon adsorption
level?
rate?
how long?

1:1000,000 → 2.8 ppt PAHs

treating the water

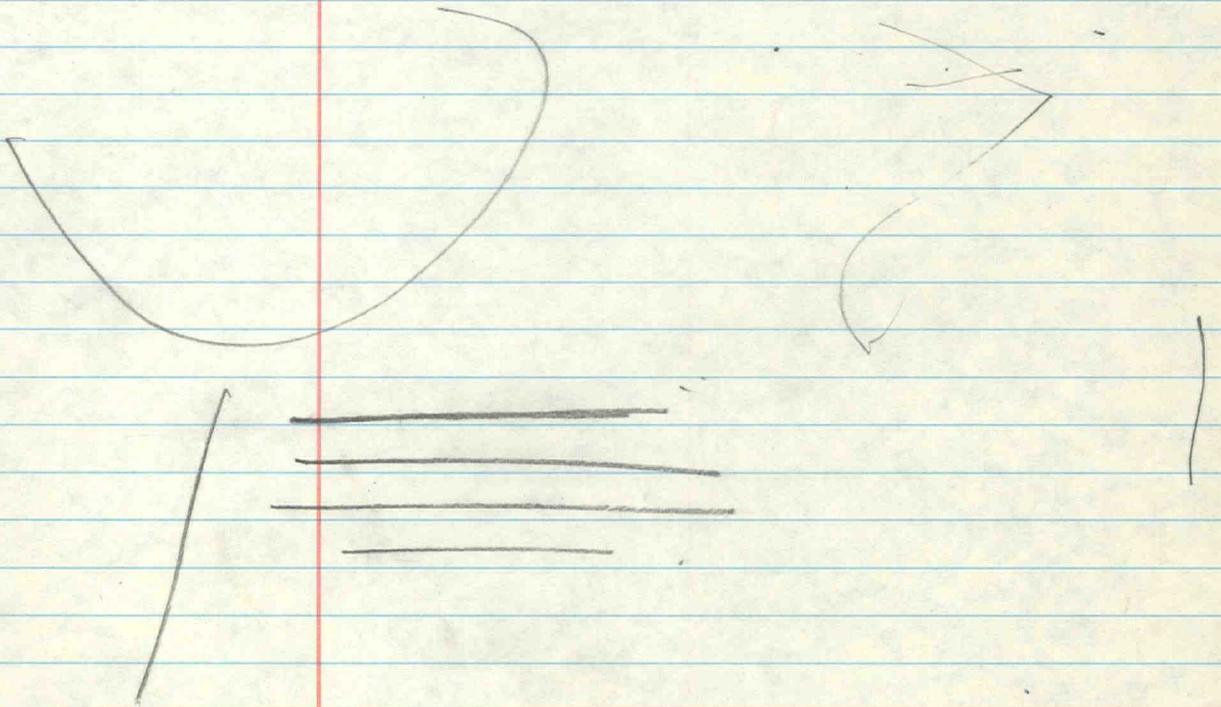
state wants \$ 500,000

① Bob —

Heuman

① PdC

② dujt



008702

no guarantees upfront

schedule a series of meetings
to solve the problem

isolating
① source

② breaking up pathway to environment

③ cleaning up

road consent decree

10/19

11/25

10/25 or?

↑
Matters filed
by name owners

↑
agreed that
day

7 days in advance
of oral argument
impossible in current
matters in opposition

11⁰⁰ Friday - motion to intervene

- Reilly feels that should file motion to
continue

because will file motion to dismiss by that day
Reilly would rather deal w/ Feds

state + city / Judge want throw them out

008706

~~Inter. 14 & R. Comparison forms for D~~

CSP Attach #16 for Frank Herman

call Hull - analysis of peat samples

call GC Peaks Summaries

Scientia M

~~notes~~ Hull

~~Biochemical~~

Burr

~~Notes~~ ~~Report~~

~~Si~~

D

Health Imp

~~Sept~~ Zpi

Sever Study

Analytic xp

Louisiana Exl

CDP #13

Report

D Intro

D, M listing

M Future work

M Witness list

D. Intro data

M wells

depth range aquifer use closed? # samples

plot of well locations

' D

M bulk of data

D surface, soil

D GC/QA, CofC

M graphics

To do :

Technical Summary & Evaluation of Pelly Reantator

- false assumption
 - data present
 - who std
 - lack of env. concern
 - Hull → movement
 - Cocar, Amur pr. + nit. / other
 - barhases, acids, other PABs
 - H₂O₂ inorganic / estatus

call Grant's profile

D does box report

008683

008684

list of labs

list + description of types of test procedures
evolution of GENUS
HPLC

Thin Layer Chromatography

GC
GC-MS
GC-ECD
GC-FID
GC-NPD

GC-MS
GC-ECD
GC-FID
GC-NPD

D. 10/10/10

M. 10/10/10

D. 10/10/10

M. 10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

Hult 10/7/90

USGS

uses — Fall '78 (4) GC
GC/MS
nephthalene

and x
Plaster-like
St. Peter
some in dusting

water — summer 80

MDH — extracted , HPLC
USGS → Denver

USGS — John Mason JMM
Tim Thumblad TTT
Marc Hult MH
- Greg Justin GJ
Ron Wolf RW
H { Mike Schonberg MES

microbiology 450 / 13 wells
total anaerobes → 3 media
total aerobes → 1
direct count →

professional paper —
maybe available for

4 functional groups → sulfate reducers
denitrifiers
iron reducers
methane producers

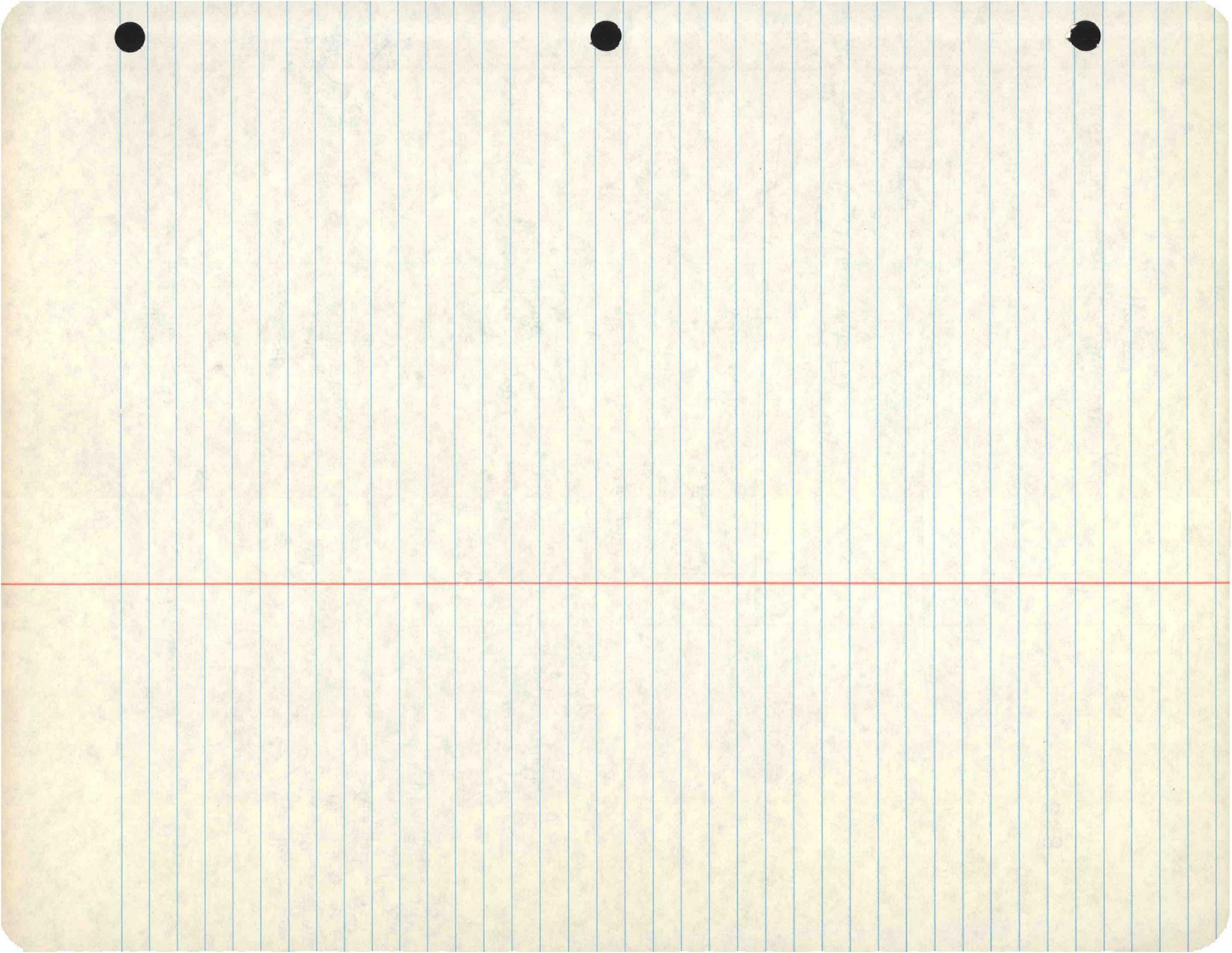
degradation studies

SLP → urban run-off study in 7 country metro area
Basset Creek Watershed
N of site
sampling

MNAG, MPCA — pictures and complaints

HUD — Flood study for Minnehaha Creek / USGS
100 yr. flood zone
5 pattern of site

008685



12/73?

R. Noridgh, Ross

USGS - open file report

Water Resources Outlook for the Twin Cities Area - Met Council

1962

MDH report

nitrate contamination from septic

surfactants

coliform

n100

40-60% of drift wells showed contamination

M. Hult - memo

Spring 80

other sources of contamination

1) general nitrate

2) 280 ft. E Terry Excavating - gasoline spill
MPCA working

3) Prestotite Co. - (since 1930s)
acetylene refining / lagoons

4) Andrak Chemical Co.
fire 11/74 or 75 - pesticide manufacturing
25000 lb PCP

5) DA Lubricants -
overlies the NW Railroad well (1002)
repackaging lubricants - numerous spills
numerous spills
1 recent spill - MPCA cleaning up

J. Aho

6) National Lead / Interacorp.
battery processor -
lagoons

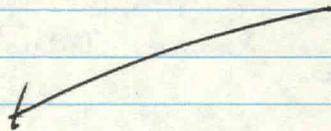
008686

Monitor Drill Well
(another 1000 ft. well)
looking for this well

Golden Auto Parts now need so auto reclaimers
? crank case oil

most concern

7) sugar beet company on site



MW railroad / DA

PAH - MDH - updated

USGS geophysical logging - analysis of not seen by
packer analysis 4 more samples

well reconstructed
Spring, 80

Ironon-Galesville
pump in / may not have been sampled yet

Marc Kultz's bibliography
ERT list of references

Kultz's management alternatives
user alternatives

- 1) monitor wa
- 2) treat
- 3) develop alternative supplies

aquifer management opt

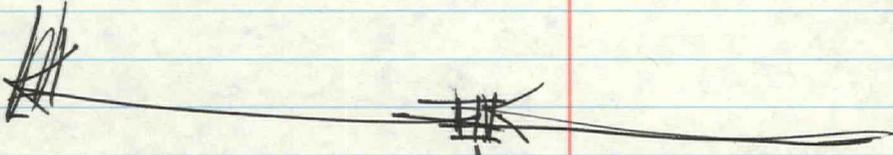
- 1) control contaminant movement w/in aquifer
- control municipal pumpage
- 2) prevention
- well abandonment program

source management

- 1) intercept
- 2) convert
- 3) remove
- 4) immobilize

008687

889800



3 detectors
 1 Howesent
 1 280A
 1 254A
 addition ally, wavelength scanning

configuration

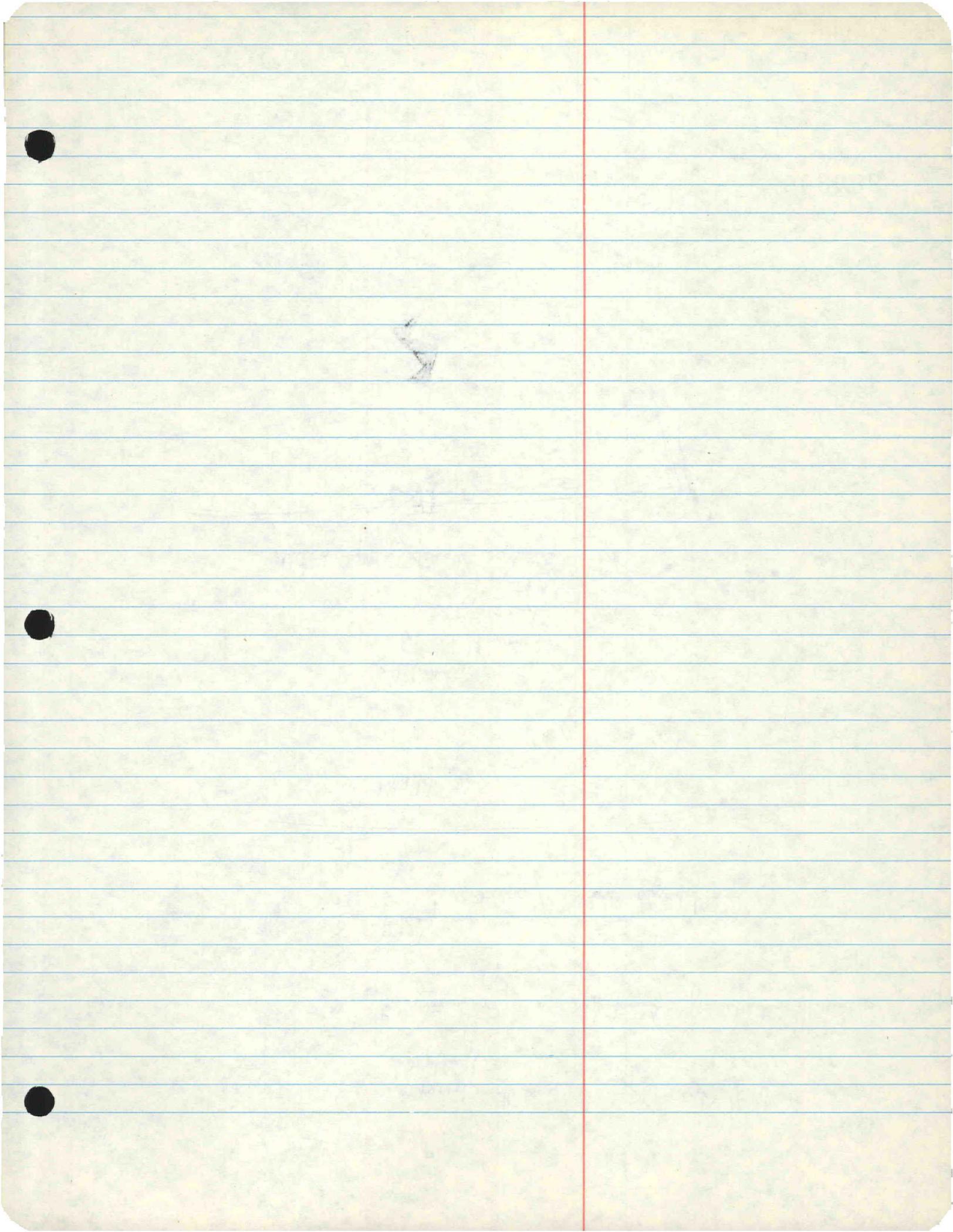
MDH lab v. Saco

holding times longer
anaerobic / aerobic degradation

F. Scum - no adjustment for extracter efficiency

2 methyl naphthalene
biphenyl

cut-off



Furnis for Hickok contract

Soil Testing

Burr

Hickock

CH₂M Hill

CEI

Weston

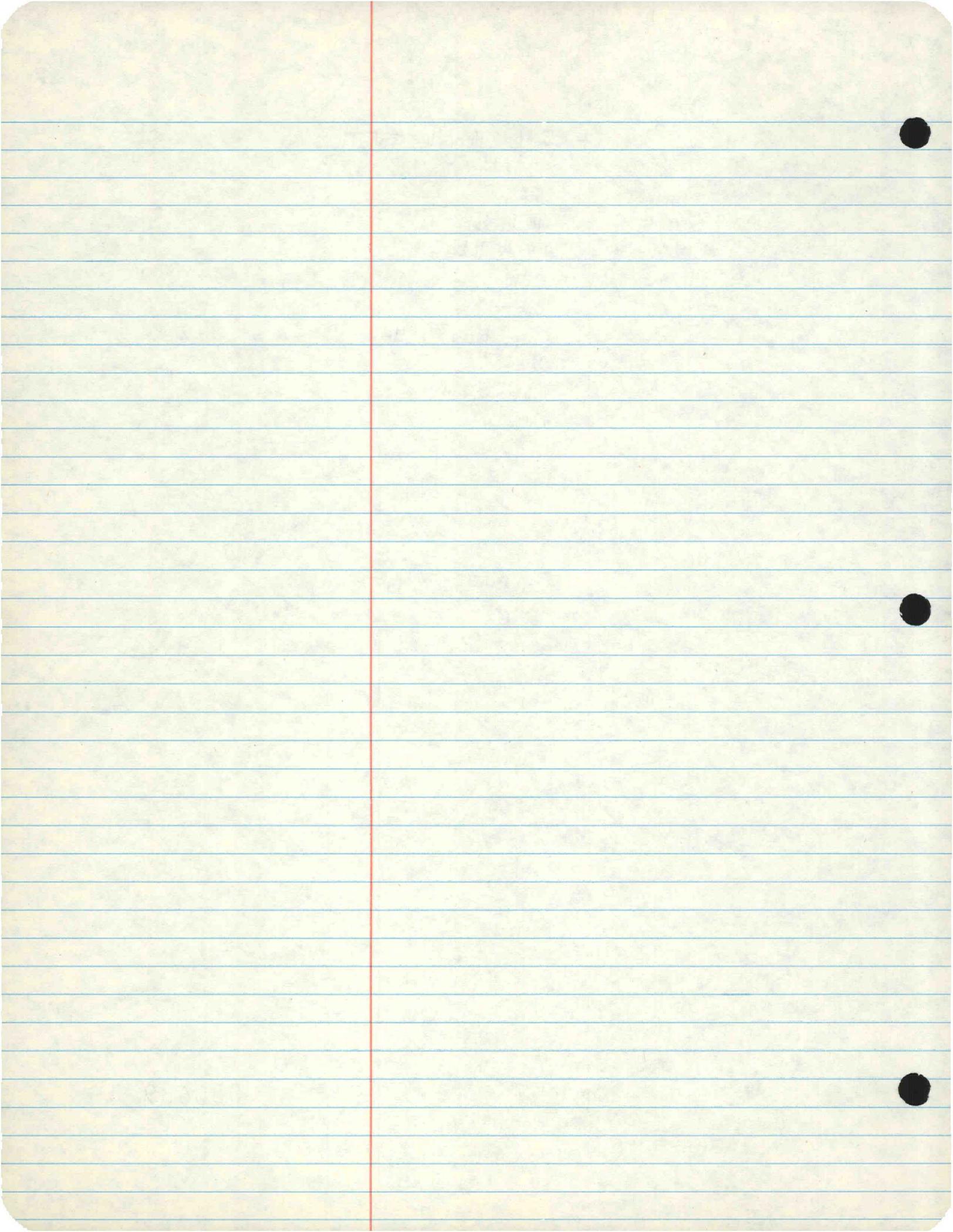
Camp, Dresser + McGee

OSM

Dunham

NUS

008689



① USGS → MDH analysis / 25

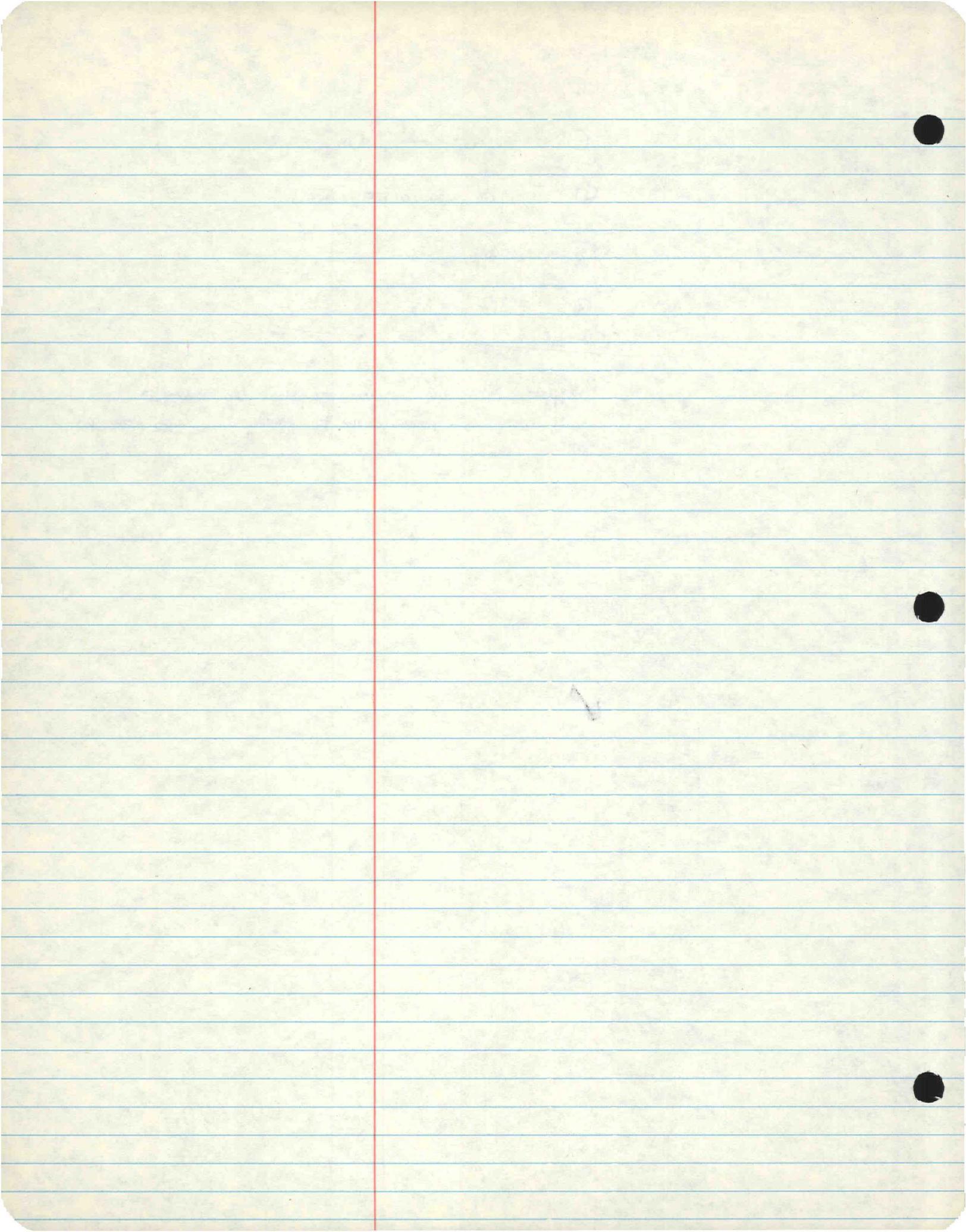
② field measurements recent

③ crus

④ water samples

suggest that do preliminary work on samples
so know how to analyze each sample

008690



Bar problem —
chemical + physical problem characterization;

Vern Tollefsrud — Pub. Works, SLP
920-3000

last fall, '79
dog + pony show by Dick Kopyy — all state agencies involved

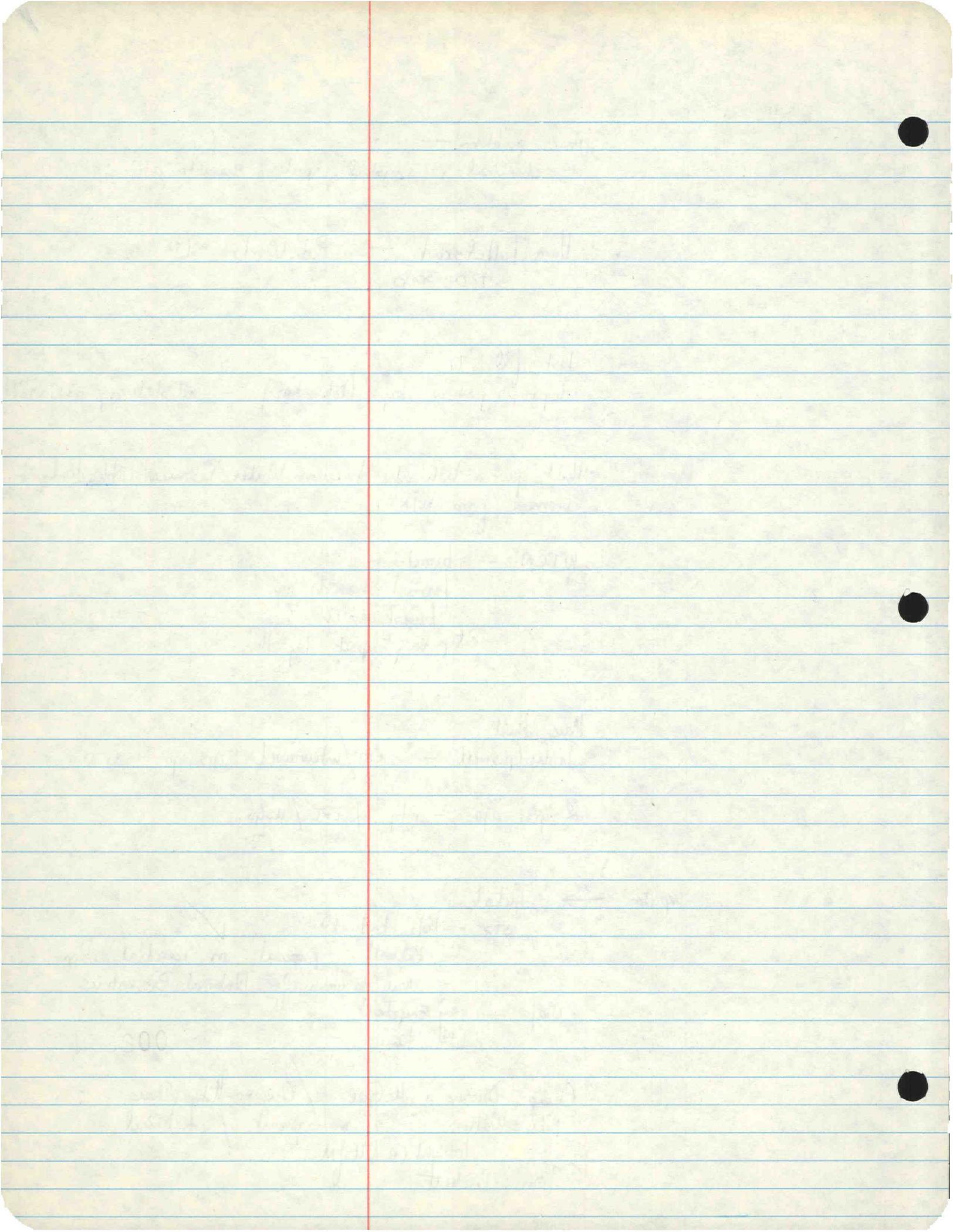
Hult gave a talk at American Water Resources Public Works mtg.
women from KOM

WTCN — broadcast
from 1 month ago
breast cancer?
city very upset by this

NON-RESPONSIVE

inputs → Hickey
STS — Bob Kadwell ✓
— Kadwell's proposal on remedial action
— had to work for National Biocentrics
Olaf — very competent
little time 008691

Camp, Dresser + McGee / Chicago-Milwaukee
Bill Walton — management / technical
taught @ U of M
Tom Prichett

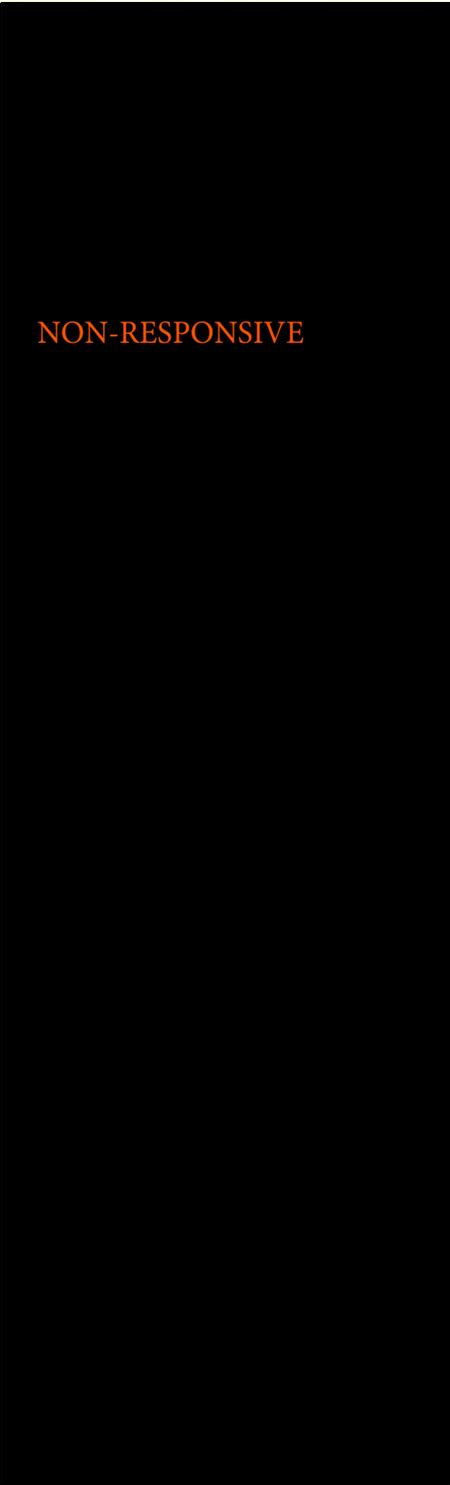


May/79

recent - practice of instituting
unconfirmed / confirmed on one
detector
put in QA/QC documentation

008682

Well samples collected in well abandonment program



NON-RESPONSIVE

<u>lab Sample #</u>	<u>Document #</u>
36837	9200738
37075, 36666	9200746, 9200720, 9200711
36577, 36634	9200718, 9200719
36890	9200683, 9200744
36716, 36526	9200707, 9200709, 9200721
36571	9200708, 9200717
37260, 37260	9200672, 9200681 9200729
36503	9200684, 9200732
36892	9200748
37274	9200731, 9200678
36750	9200726
36730	9200710, 9200715
36685	9200711, 9200720
36573	9200713
36889	9200744
37262	9200669, 9200733
37263	9200675, 9200727

008669

9201198

Franklin - study / soil boring
OSM - power development study

Report

MSA - not valid

Hickok (1969) watershed / SLP

MRA (1970) report on Kelly disposal (4/70)

MDH 9/1974

Slide 1974

Barr Phase I 1976

Barr Phase II 1976

Barr Phase II 1977

MDH Risk Assessment I 1977

Nov, 1978

MDH Risk Assess. Final (scope 4/78-7/80)

not completed

Jan, 78

USGS 1 - geology + hydrology

not completed

Aug, 1980

USGS 11 - water

not completed

Oct, 80

USGS Final

Conroy Tech II - report Aug 72 - OK to develop

any reports from Hickok on treatment / pumping / barrier wells

from MDH on well abandonment

from USGS on microbiology / surface run-off

Interagency 78

Municipal well data
Tony Monokian / sampler

Jan. 80
May / 80

data just received (150)
low private wells
pumps - 1200 mg/l
Jordan aquifer
well just west of Kelly (#5?)

to be sampled again

SLP → 1972 / assembly of data

plants / oil & grease
municipal, private & industrial wells

MDH 12/73 - 10/74

Hans - Olaf Rasmussen

- HGM

- geologist + geophysicist

late 40s - early 50s

/ dump

test pit for MRA
or +

008671

Hickock / water treatment study for city
GAC + powder activated carbon
pilot plant study
W-15

2/1/80 - started

Bar - conclusions / too broad
good reputation

to send: photos from 7/3/74
lebanon since May, 1980
several more / well abandonment data

Otto Strauch -
civil engineering / hydrologist

Richard Kopp
Div. of Public Works
3000
SR -

10⁰⁰ AM
U.S. Courthouse

St. Anthony
in Minneapolis
Procena -
casing

Falls

008600

Charles

Normandy Inn

Top of IDS casing

Anthony's (what)

Marquet Inn

North Star Inn

Nacm(?)

Butter Square V -
measurement

Murray's

EDINA WELLS

WELL NO.

ADDRESS

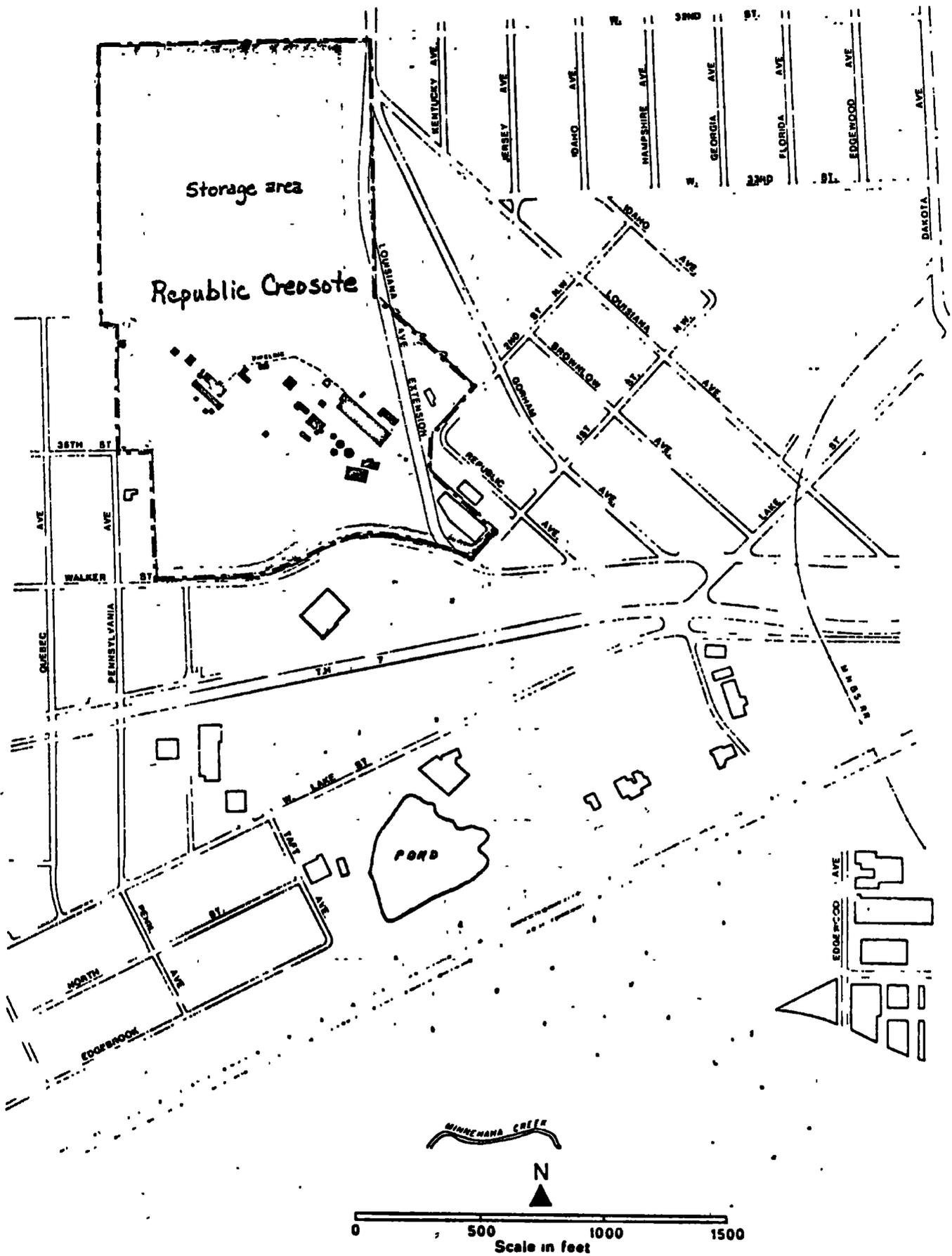
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- 18

NON-RESPONSIVE



50002486

008662



008708

Carbon adsorption of toxic substances
EPA document

PO - Jesse Cohen Cincinnati

Joseph F. Lajonara 11/6/80
(201) 321-6741

doesn't think peroxide treatment will oxidize a polynuclear aromatic ring
certainly won't completely oxidize to $\text{CO}_2 + \text{H}_2\text{O}$

Carbon adsorption

effectiveness depends on water solubility - phenol often used as a
contact time midline std.

he has papers Calgon isotherms

removal of benzene, toluene

Carbon columns

PAC \rightarrow Aquasand + PAC is a hazardous waste

Calgon carbon - drinking H_2O quality or
regenerated industrial quality

FTI contract can do cost estimates

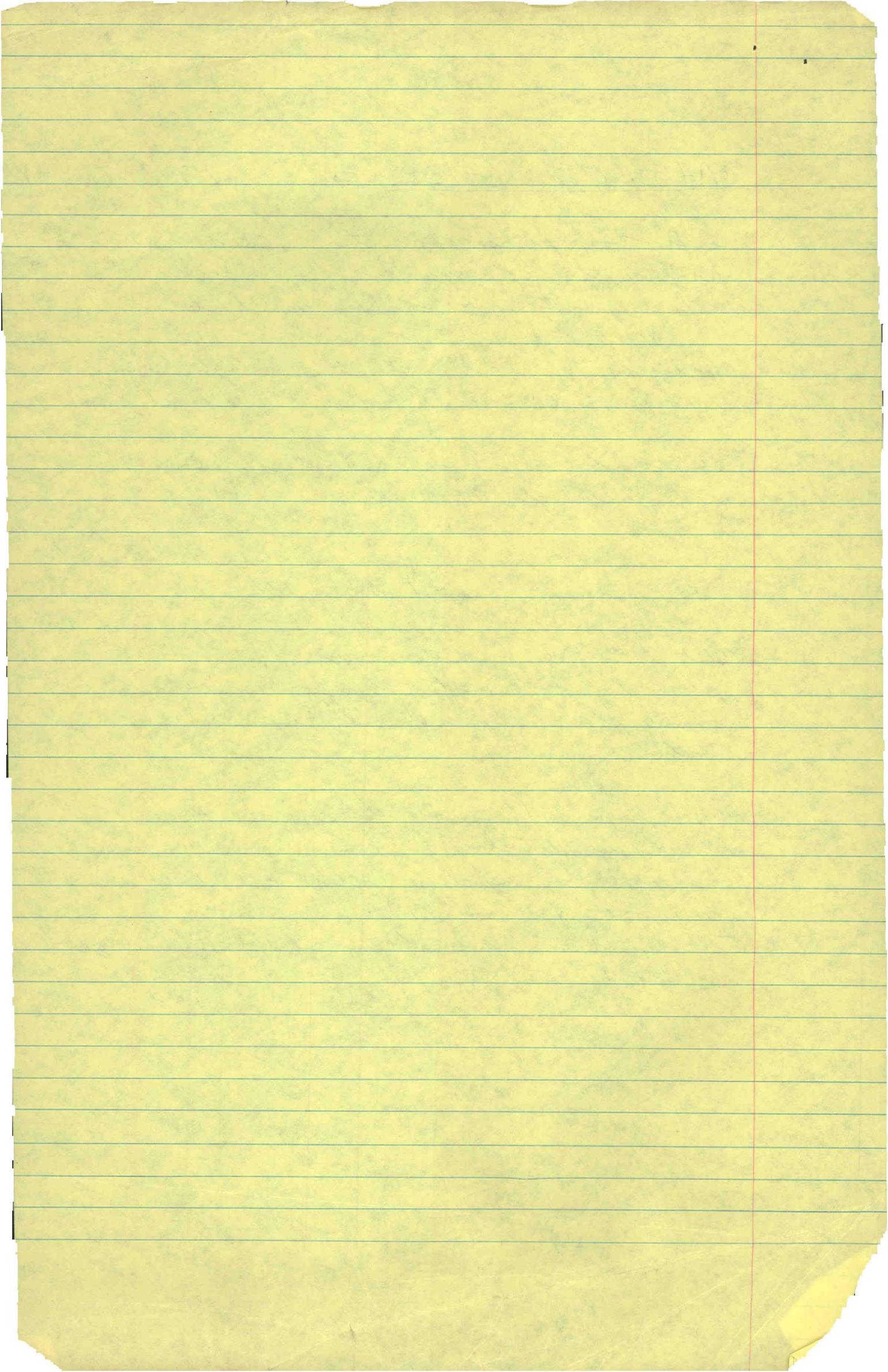
001400

904100

The first part of the paper is devoted to a discussion of the general theory of the problem. It is shown that the problem is equivalent to a problem in the theory of differential equations. The second part of the paper is devoted to a discussion of the special case of the problem. It is shown that the problem is equivalent to a problem in the theory of differential equations. The third part of the paper is devoted to a discussion of the special case of the problem. It is shown that the problem is equivalent to a problem in the theory of differential equations.

MDH method of HPLC (compared w/ EPA method 610)

1. no fraction phase separation (clean-up) because the samples are already clean - heavily contaminated samples are diluted
2. cyclotriaxane is used rather than methylene chloride in order to be more selective for PAH ~~extraction~~
3. 4 liter sample \rightarrow 4ml extract instead of 1 liter \rightarrow 10ml to yield higher PAH levels
4. increase sample size from 5-20 μ l to 200 μ l to increase concentration of PAH
5. MDH doesn't have the equipment for reverse phase liquid chromatography so they have to use normal phase which depends upon relative retention times.
6. MDH uses a fluorescent detector and two ultraviolet detectors (254nm + 280nm) + usually conducts two injections (fluorescent w/ 254nm UV + fluorescent w/ 280nm UV).
EPA method 610 uses a fluorescent detector which may or may not be used w/ a UV detector.



003818

Call Frank / contact

Example 6 wells —
1) additional
2) replacement

6 split samples
5 way
3 usgs
MRI
MDH
Dewer / 2 specialized research groups

39	water samples
10	land
10	above H ₂ O samples
59	samples

Call Evelyn Conrad

back
Mar that
3/2/21
10 30

Call

002818

3/27/80 Reilly Ter meeting
Loren Myers MPCA 296-7218

City may add ~\$5,000 to Hickok contract for
design of carbon treatment in water supply wells.
Not presently treating drinking water at Spring well 15

IMMEDIATE RELIEF DISCUSSION

Mike Convery ^{very} MDH works for Ed Ross 296-5297
Larry England 296-5330

Dick Koppig - Dir. of St. Louis Park DPW
- in charge of water supply treatment project

Jaye Gray - MDH Health Assessment Section

John McQuire - MPCA Chief of Surface Water Section
- will decide acceptable discharge limits

City water supply must be treated - probably by this
summer.

want to discuss - next 3-18 months actions ^{actual} ~~desirable~~
- coordination among parties

- MDH any more well cleanup

- MDH any more health assessment

✓ MPCA acceptable discharge limits schedule

✓ MDH acceptable potable water limits schedule

✓ St. Louis water supply approach

1:30 pm Mike Convery + Pauline Beuchard MDH
hydrologist assistant to director
MDH attorney

November EPA limits 9.7 ^{ppm} ppt for 1:100,000 risk

Health Risk Assessment

Check out 11/78 Health Assessment

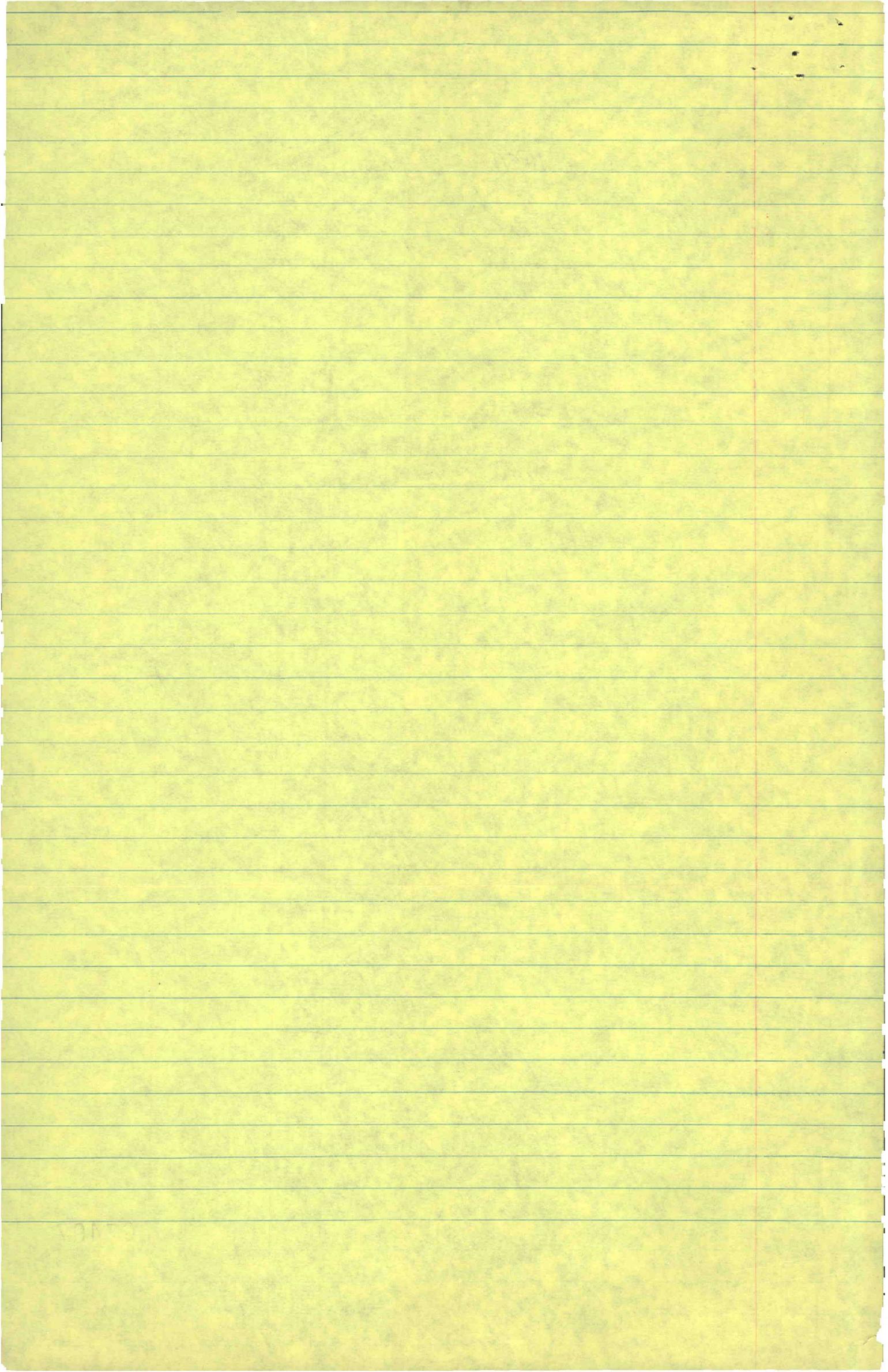
Check out EPA R+D project for St. Louis water
treatment. Probably no money available.

Check out \$25,000 St. Louis proposal
concept + schedule

007407

Check out St. Louis option for Minneapolis tie-in

cost, schedule, permanent vs. ~~actual~~ temporary
Check out ETS declaration of neg. eff. with OPA



St. Louis Park Meeting
3/26/80

Name	Agency
Donald R. Allin	USGS - St. Paul
Marc Hour	USGS St. Paul
Steve Shakman	AG-MPCA Roseville
Ed Ross	MN Dept of Health
BOB LEIPINGER	USEPA Region II
FRANK BIROS	USEPA WASH. D.C.
Ann Ceyre	AG. - Minn
Jim Pankania	U.S. EPA Region V

003408

007918

(612) 927-8861

Edina

supt. water supply Lee Libby

well and list of wells - addresses, depths, year installed, design pumps - all wells are used, not all year round

(612) 869-7521

Richfield

Ken Conway - water supply

50 Legion Lake

2 Nicolet Park

Nicollet + Sturges

1 pcj

2 pcj

} primary

3 shakopee

4 shakopee

5 shakopee

6 shakopee

7 Jordan

Plymouth Bob Brading supt. water supply (612) 559-2800

81-18

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000000

Scruton

Bill Scuwton
cyclohexane extract at neutral ph
acids

Grady England
municipal wells
from less than one week ago

FID detector, approx. 50 samples
→ nothing in diff samples
very few wells

additional wells, not municipal wells

① still in existence
Minnesota Rubber
S+K

← just recently sampled

② multi-aquifer wells
sampled + sealed
extracts frozen neutral cyclohexane

inventory of wells already sampled

SLP #1	\$ 400-500	install + remove
W23	\$ 1000	install + leave
NW well in shopping center		

1952

Development of the ...
... ..

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Closed Public Supply Wells

City of Elina (2-3 miles S of Reilly)

St. Louis Park wells #7 and 9 - Cedar Lake Road + Nevada

#10 and 15 - 29th + Idaho

→ #4 - 41st + Naichey

this well was not contaminated when 7, 9, 10 + 15 were shut down

Reilly production wells uncased until 1933

samples 10-50 ppm

early 40's - drainage ditch contamination complaints

results reported 6.5.40

30 ppm phenol effluent from Reilly property

27 ppm near side of Hiway 7

62 ppm far side of Hiway 7

Reilly Tar in operation since 1916

Reilly Tar mtg. w/ MPCA on 5.28.68 referenced tank leak
spilling 10,000 gallons of coal tar when?waste water w/ coal tar derivatives 300 gpd
straw bale H₂O filters in 1968

how big is impacted population

phenol samples from Republic Creosote Co.

MPCA - LT Johnson

date sampled 8.1.68 10⁰⁰ AM

received by lab 8.1.68

4212

Republic Creosote Co. - Effluent leaving property 140
St. Louis Park MN

Effluent at Hiway 7 15

Effluent at first pond 1.9

Effluent at second pond 0.8

Effluent at source 380

3310 , # 3311

date sampled 6.8.68 10⁰⁰ AM

date received by lab 6.13.68

Republic creosote Co. ~~samples~~

St. Louis Park MN

Waste Water at settlement pond 160

effluent leaving property 130

5874

MPCA - EHH sampled (Elsworth Harpo)

date sampled 10.21.68

date received by lab 10.22.68

St. Louis Park MN

run-off 0.9

007771

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~~Case~~ Reilly Tar Case Management -

does MN have GW standards?

diversion of water from ~~land~~^{or} into RT contamination area

locate all wells + use for 1) use

define areas of recharge + flowlines 2) open or closed
3) typical pumping rate

future migration of contaminants

contaminants what are they, how much

density of contaminants

contaminant plume flow + soluble halo flow

natural areas of recharge + discharge w/ well overlay

protocol for well pumping over years as well as sampling techniques + other QC criteria

what year + techniques were PAH analytic measurements developed?

-

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Metropolitan District Office

ADH

St. Louis Park Water Department

USGS study referenced

1973 - St. Louis Park Municipal Water Supply active investigation -

low levels of phenolic compounds

6.13.68

APCA

LT Johnson took samples

10 AM

①

wastewater at affluents pond - Republic Cresote

160 phenol

②

effluent leaving property

130 phenol

6

ADH

package

no chain of custody info

community wells

137 samples from

1-4/80

what is analytical procedure?

why were anthracene level blank on some samples?

Reilly Task Force

Herman

Lloyd

all Bob

date to file

Bob - daily cassette copying

take filed by 7/25

expert witnesses for PAM

David -

Frederick - Batelle

~~Wetterberg~~

conference call

9-725-4242

answers to unknown questions

9-776-7703

Ken Stevenson

USGS

call

Wednesday

7/23/80

per what

has done

(612) 725-7841

007773

copies to Lisa, Mawson, Bob

coking in 1940's
coal tar, own + bought

→ cracked



naphthalene

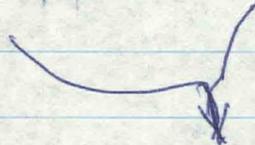
↙

acrosote

→ acids

} stored in underground tanks

2% cut (waste) + uncontaminated cooling water



quench system



Minnehaha Creek

discharge into well on-site (next to steel building)
in area of tank storage

contamination in ~~1929~~ 1929

5000 gallons of acrosote from ditch removed and reprocessed

1300 gallons of coal tar lost in explosions

MDH - 1937 -

007774

Reilly

1932, City abandoned one of its wells in vicinity due to obnoxious tastes

1970 spring + summer, City negotiating for roadway

formal notification of air + water pollution violations

April 1970 MPCA report based on 1968, 69 study by Eugene Hickock + associates

October 2, 1970 litigation

Barr Engineering Report 2 phases May, 1976 we have Phase II Report

~~1976~~

July, 1977

USGS August, 1980 preliminary report November 1979

Minnesota DOH

12/73 MDOH low level phenols in several main + index wells

11/13/79 MDOH report

5 x 10⁻⁹
.005 ppm
5 ppb

5.0 µg/l

.1

007775

Faint, illegible handwriting in blue ink, possibly bleed-through from the reverse side of the page. The text is scattered across the upper and middle sections of the page.

2012
2008
2008

2012

1.

2012

from 4.22.80 MPCA report

2nd bioassay
(not dated in
report)

fathead minnow

pond s. of Hiway 7

at the completion

no algae or microfauna found

75% solution (10.5-19.0 mg/l)

phenolics 14-19 mg/l undiluted

} all fish expired
w/in 24 hours

Temp of pond 10-14°C

DO 6.5-7.2 mg/l

after completion of the lab tests (no actual date) fathead minnow

① pond s. of Hiway 7 ← w/in 24 hrs. all dead

② Minnehaha Creek - above drainage influence of creek

③ Minnehaha Creek - downstream from the pond

} no significant
mortality w/in 24 hrs.



conclude: 96 TL_{ms0} fathead minnows = 8-19 mg/l

TL_{ms0} = concentration of which 50% of the test organisms survive within the time limits of the test

bottom sediment samples:

ditch s of walker street

ditch n + s of Hiway 7 where enters pond

center of pond

heavy accumulation
of black, oily coarse
lode sediments

Hickock + Assoc. study for St. Louis Park (undated)

city wells

0.023 ppm → trace levels

phenols

large values shallow aquifers

soil borings (outside of plant site) to depths of 20 ft.

concentrations 0.02 ppm range

City Wells - State Health Dept. 4.16.70

phenols

≤ 0.005 ppm

007776

detection limit for the chloroform extraction method

Phase 1 - 14 soil borings to a depth of 50'

Darr Report Phase 1 & 11
contracted due to recommendations during UPDES hearing

City soil investigation N. portion of site
12/73 UPCE informed by MWH that low level plumbs found in
several muni and indu wells near the site.

* UPCE 10.25.77 recommendations memo - entire copy

Plataste limestone - flow generally to the east
towards a buried bedrock valley
flow through fractures and fissures which have become solution
channels

Glennwood shale
St. Peter sandstone - 18 ft. head difference between the Plateau & the St. Peter
movement generally to the east

Consulting Firm of Orr, Schalen, Mayson -
Waynesburg from 275 UPDES permit hearing
72, 73
current past data on groundwater contamination

UPCE 4.22.70 report
Authors Wilke, Bishop, Koone
N of Walker Street
sampling point before the drainage culvert → wash
BODs
phosphates
turbidity

4.14.70 - 150 mg/l > 10,000 mg/l 82
4.18.70 - 1100 mg/l > 10,000 mg/l 96
bioreassay 4.18.70
undisturbed off. (at head numerous
25% ss. (227 mg/l)
5% ss. (55 mg/l)

dilution water from
Winnemahaha Creek
no algae or micro fauna found -
extensive fungus micellium
100 to 1000 gal. w/in 24 hours
0.0777 gal. immed. turbidity
0.0777 gal. immed. turbidity

007778

Wells w/ faulty track - abandoned or treated

1938 U.S.G.S report

Municipal well closed in 1937

location $\frac{3}{4}$ mile due east of bog
dred to 340 ft, drilled to 540 ft. (Jordan)

Proctor's well 230 ft. depth

more # of residence wells - 50 ft. depth to Platville or averaging ground
Erdberg Friedrichs & Co. - larger of the two wells, originally bored into
St. Peter sandstone @ 230 ft., 2 yrs. ago (1936?) well was

extended to 410 ft. (Jordan) - strong faulty track developed

Analysis of well samples was done and was attached to original
report, the data have analytical results

Kelly, Tex inherent correspondence 9-17-38
from C.B. Edwards to W.J. McEllan
drainage ditch contains 5.35% oil
109 ppm phenol

Marc Hult

120 square miles
80 acres of Peilly

USGS for MDH

- ① rocks + plumbing
- ② analysis of above, monitoring
- ③ modeling
- ④ effectiveness of remedial action

Marc Hult call back
see Hansen

Camera

FCC

statements of witnesses

records on site

preliminary injunction?

Tom to U.S. Atty. for discovery of strategy + witnesses
Fred for written discovery

007779

March

Store ← Water Quality

Inorganic pumping U of Minnesota

well construction location

USGS - GWSI system

use of well use of water

Watts Store

logs

MGIS

woods of well logs soil borings geologic info

values file USGS

water level info

basic data reports on computer files some

